FILE 'CAPLUS' ENTERED AT 16:01:13 ON 08 FEB 2000
L6 17298 SEA FILE=CAPLUS ABB=ON PLU=ON (BACTERI## OR MICROORGANISM OR MICRO ORGANISM)(5A)(DETERM? OR DETECT? OR DET## OR SCREEN?)
L8 24 SEA FILE=CAPLUS ABB=ON PLU=ON L6 AND RAMAN
L9 24 SEA FILE=CAPLUS ABB=ON PLU=ON L8 AND SPECTR?

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L9 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:37031 CAPLUS
TITLE: Rapid biological agent identification by surface-enhanced **Raman spectroscopy**
AUTHOR(S): Farquharson, Stuart; Smith, Wayne W.; Elliott, Susan; Sperry, Jay F.
CORPORATE SOURCE: Advanced Fuel Research, Inc., East Hartford, CT, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1999), 3855(Air Monitoring and Detection of Chemical and Biological Agents II), 110-116
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The Chem. Weapons Convention prohibits the development, prodn., stockpiling, and use of warfare agents (chem. and biol.), and requires their destruction. Yet their use persists and has been included in the terrorist's arsenal. Currently, a no. of anal. methods are being developed to perform rapid measurements of trace agents to ensure treaty compliance, as well as safe environments for military personal and the public at large. We have been investigating the ability of surface-enhanced **Raman spectroscopy** to **detect bacterial** nucleic acid-base pairs with sufficient sensitivity and selectivity to eliminate the need for enumeration used in polymerase chain reactions and culture growth, required by other measurement techniques. The design of a small vol., fiber optic coupled, electrolytic sample cell is presented along with anal. of DNA and RNA sepd. from non-toxic bacteria.

L9 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:342323 CAPLUS
DOCUMENT NUMBER: 131:211171
TITLE: Vibrational **spectroscopy** as a probe to rapidly **detect**, identify, and characterize **micro-organisms**
AUTHOR(S): Sockalingum, Ganesh D.; Lamfarraj, Hasnae;

Beljebbar, Abdelilah; Pina, Patrick; Delavenne, Marc; Witthuhn, Fabienne; Allouch, Pierre; Manfait, Michel
CORPORATE SOURCE: Unite MeDIAN, IFR 53, UFR Pharm., Univ. de Reims Champagne-Ardenne, Reims, Fr.
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1999), 3608(Biomedical Applications of Raman Spectroscopy), 185-194
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Fast and exact identification of a great no. of microorganisms is becoming a serious challenge. Differentiation and identification of microorganisms is today mainly achieved by the use of a variety of distinct techniques based on morphol., serol. aspects and a set of biochem. test. Vibrational **spectroscopic** techniques can be complementary and useful methods in this field due to their rapidity, 'fingerprinting' capabilities, and the mol. information that they can provide. Using SERS at Ag colloids, we have conducted pilot studies to rapidly **detect** and identify **bacterial** clin. strains. Using a **Raman** microspectrometer equipped with a He/Ne laser, a first attempt to record SERS **spectra** was made on colloidal solns. **Spectra** were of good quality but not very reproducible due to the movement of the microorganisms. Strains were then put in presence of Ag colloids and direct on-plate anal. was performed. **Spectra** were more reproducible, with diminished fluorescence, and reveal characteristic cellular-level information. Different growth conditions and colloid prepns. have been tested. Pseudomonas aeruginosa and Escherichia coli clin. strains, responsible for nosocomial infections, have been our first test samples. An attempt has also been made to record SERS data from gold colloids in view of future measurement in the near-IR. **Spectroscopic** data are compared with ATR-FTIR results.

L9 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:342321 CAPLUS
DOCUMENT NUMBER: 131:225675
TITLE: Surface-enhanced **Raman** **spectroscopic** monitor of triglyceride hydrolysis in a skin pore phantom
AUTHOR(S): Weldon, Millicent K.; Morris, Michael D.
CORPORATE SOURCE: Dep. Chem., Univ. of Michigan, Ann Arbor, MI, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1999), 3608(Biomedical Applications of Raman Spectroscopy), 168-174

CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Bacterial hydrolysis of triglycerides is followed in a sebum probe phantom by microprobe surface-enhanced **Raman** scattering (SERS) **spectroscopy**. The phantom consists of a purpose-built syringe pump operating at physiol. flow rates connected to a 300 .mu. i.d.capillary. We employ silicon substrate SERS microprobes to monitor the hydrolysis products. The silicon support allows some tip flexibility that makes these probes ideal for insertion into small structures. Propionibacterium acnes are immobilized on the inner surface of the capillary. These bacteria hydrolyze the triglycerides in a model sebum emulsion flowing through the capillary. The transformation is followed in vitro as changes in the SERS caused by hydrolysis of triglyceride to fatty acid. The breakdown products consists of a mixt. of mono- and diglycerides and their parent long chain fatty acids. The fatty acids adsorb as their carboxylates and can be readily identified by their characteristic **spectra**. The technique can also confirm the presence of **bacteria** by **detection** of short chain carboxylic acids released as products of glucose fermn. during the growth cycle of these cells. Co-adsorption of propionate is obsd. Spatial localization of the bacteria is obtained by ex-situ line imaging of the probe.

L9 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:90269 CAPLUS
DOCUMENT NUMBER: 130:121841
TITLE: **Raman** optrode processes and devices for **detection** of chemicals and **microorganisms**
INVENTOR(S): Grow, Ann E.
PATENT ASSIGNEE(S): USA
SOURCE: U.S., 41 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5866430	A	19990202	US 1997-864015	19970527

AB A methodol. and devices for detecting or monitoring or identifying chem. or microbial analytes are described. The methodol. comprises four basic steps: (1) the gas or liq. medium to be monitored or analyzed is brought into contact with a bioconcentrator which is

used to bind with or collect and conc. one or more analytes; (2) the bioconcentrator-analyte complex is then exposed to radiation of one or more predetd. wavelengths to produce **Raman** scattering **spectral** bands; (3) at least a portion of the **Raman** **spectral** bands are collected and processed by a **Raman spectrometer** to convert them into an elec. signal; and (4) the elec. signal is processed to detect and identify, qual. and/or quant., the analyte(s). The methodol. of this invention may also comprise **Raman** reactive capacity anal. of the bioconcentrator itself, simultaneously with or independently from the detection of the analyte, to det. the potential ability of the bioconcentrator to complex with analytes; the results of this latter anal. may be used to affect or alter or modify the methodol. involved in detection and anal. of the analytes. Also the invention is accomplished by a **Raman** optrode comprising: a bioconcentrator capable of binding with the analyte(s); a mechanism or procedure or device for bringing the gas or liq. sample into contact with the bioconcentrator; a light source suitable for generating **Raman** scattering; a **Raman** **spectrometer** capable of collecting and processing the **Raman** scattering **spectral** information and translating it into an elec. signal; and electronic hardware and software for analyzing the elec. signal and translating the signal into information on the presence, identity and/or quantity of the bound analytes. Various forms of bioconcentrators are described, as well as a variety of analytes which may be detected, monitored, or identified by this invention, and a variety of devices which can be fabricated based on this invention.

L9 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:640392 CAPLUS
DOCUMENT NUMBER: 129:257346
TITLE: Direct **detection** of **bacteria** -antibody complexes via UV resonance **Raman spectroscopy**
INVENTOR(S): Nelson, Wilfred H.; Sperry, Jay F.
PATENT ASSIGNEE(S): The Board of Governors for Higher Education, State of Rhode Island and Provi, USA
SOURCE: PCT Int. Appl., 13 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9841842	A1	19980924	WO 1998-US4623	19980310
W: AU, CA, JP				

Searcher : Shears 308-4994

RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

AU 9864555	A1	19981012	AU 1998-64555	19980310
EP 966662	A1	19991229	EP 1998-910272	19980310

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

PRIORITY APPLN. INFO.:	US 1997-818534	19970314
	WO 1998-US4623	19980310

AB A system for the **detection** of **bacteria** antibody complexes is disclosed. A sample to be tested for the presence of a bacteria is placed in a medium which contains antibodies attached to a surface for binding to a specific bacteria to form an antigen to antibody complex. The medium is contacted with an incident beam of light energy. Some of the energy is emitted from the medium as a lower resonance enhanced **Raman** backscattered energy. The presence or absence of the **microorganism** is **detected** based on the characteristic **spectral** peak of said microorganism. Escherichia coli was reacted with rabbit anti-E. coli antibodies and the reaction mixt. was put into a continuous cycle loop feeding through a quartz flow cell positioned in a laser beam. Laser light 242 nm was directed into the flow cell. The emitted light energy (resonance enhanced **Raman** scattering) was sensed with a **Raman** detector.

L9 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER:	1998:588814 CAPLUS
DOCUMENT NUMBER:	129:287465
TITLE:	Surface enhanced **Raman spectroscopic** monitor of P. acnes lipid hydrolysis in vitro
AUTHOR(S):	Weldon, Millicent K.; Morris, Michael D.; Harris, A. B.; Stoll, Janice K.
CORPORATE SOURCE:	Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109-1055, USA
SOURCE:	J. Lipid Res. (1998), 39(9), 1896-1899 CODEN: JLPRAW; ISSN: 0022-2275
PUBLISHER:	Lipid Research, Inc.
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB Surface enhanced **Raman spectroscopy** (SERS) at a silver microelectrode was used to monitor bacterial hydrolysis of triglycerides in lipid mixts. that model sebaceous gland secretions. Mixts. of wax esters, squalene, triolein, and triisostearin were used as model skin secretions. The transformation was followed in vitro as changes in the SERS caused by hydrolysis of triglyceride to fatty acid. The fatty acid was adsorbed as its carboxylate, which is readily identified by the characteristic band at ca. 1395 cm-1. Co-adsorption of propionate was also obsd. The technique can also confirm the presence of **bacteria** by **detection** of

short chain carboxylic acids released as products of fermn. during the growth of these cells.

L9 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:505812 CAPLUS
DOCUMENT NUMBER: 129:228260
TITLE: A comparative study of conserved protein interactions of the primary electron donor in photosynthetic purple bacterial reaction centers
AUTHOR(S): Ivancich, Anabella; Mattioli, Tony A.
CORPORATE SOURCE: Departement de Biologie Cellulaire et Moleculaire, CEA and CNRS URA 2096, CEA/Saclay, Section de Biophysique des Proteines et des Membranes, Gif-sur-Yvette, 91191, Fr.
SOURCE: Photosynth. Res. (1998), 55(2-3), 207-215
CODEN: PHRSDI; ISSN: 0166-8595
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The pigment-protein interactions within the binding site of the bacteriochlorophyll (BChl) dimer constituting the primary electron donor (P) in several, native, photosynthetic **bacterial** reaction centers have been **detd.** using Fourier transform **Raman spectroscopy**. For reaction centers whose primary sequence data are available, and assuming a structural analogy with the Rb. sphaeroides RC whose high-resoln. three-dimensional structure is known, amino acid residues donating hydrogen bonds to P are proposed. Consequently, one may propose the microenvironment structure of the primary donors studied and correlate this deduced structure with the known absorption and redox properties of the primary donors. In a mini-review of past work, the authors group and classify the primary donors with respect to their specific H-bonding interactions with the protein. This classification reveals trends in the H-bonding and certain physicochem. properties such as the P.degree./P.bul.+ redox midpoint potential, the pos. charge distribution over the dimeric primary donors in their oxidized radical cation state P.bul.+, and the absorption maxima of the lower exciton Qy absorption band of P.

L9 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:475767 CAPLUS
DOCUMENT NUMBER: 129:242013
TITLE: FT-IR and FT-NIR **Raman spectroscopy** in biomedical research
AUTHOR(S): Naumann, D.
CORPORATE SOURCE: Robert Koch-Institute, Berlin, 13353, Germany
SOURCE: AIP Conf. Proc. (1998), 430(Fourier Transform Spectroscopy), 96-109
CODEN: APCPCS; ISSN: 0094-243X

PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB FT-IR and FT-NIR **Raman spectra** of intact microbial, plant animal or human cells, tissues, and body fluids are highly specific, fingerprint-like signatures which can be used to discriminate between diverse microbial species and strains, characterize growth-dependent phenomena and cell-drug interactions, and differentiate between various disease states. The **spectral** information potentially useful for biomedical characterizations may be distributed over the entire IR region of the electromagnetic **spectrum**, i.e. over the near-, mid-, and far-IR. It is therefore a key problem how the characteristic vibrational **spectroscopic** information can be systematically extd. from the IR **spectra** of complex biol. samples. In this report these questions are addressed by applying factor and cluster anal. treating the classification problem of microbial IR **spectra** as a model task. Particularly interesting applications arise by means of a light microscope coupled to the FT-IR **spectrometer**. FT-IR **spectra** of single microcolonies of less than 40 .mu.m in diam. can be obtained from colony replica applying a stamping technique that transfers the different, spatially sepd. microcolonies from the culture plate to a special IR-sample holder. Using a computer controlled x,y-stage together with mapping and video techniques, the fundamental tasks of microbiol. anal., namely **detection**, enumeration, and differentiation of **micro-organisms** can be integrated in one single app. Since high quality, essentially fluorescence free **Raman spectra** may now be obtained in relatively short time intervals on previously intractable biol. specimens, FT-IR and NIR-FT-**Raman spectroscopy** can be used in tandem to characterize biol. samples. This approach seems to open up new horizons for biomedical characterizations of complex biol. systems.

L9 ANSWER 9 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:370875 CAPLUS
DOCUMENT NUMBER: 129:133250
TITLE: Infrared and NIR **Raman spectroscopy** in medical microbiology
AUTHOR(S): Naumann, D.
CORPORATE SOURCE: Robert Koch-Institute, Berlin, 13353, Germany
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (1998), 3257(Infrared Spectroscopy: New Tool in Medicine), 245-257
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal

LANGUAGE: English

AB FT-IR and FT-NIR **Raman spectra** of intact microbial cells are highly specific, fingerprint-like signatures which can be used to (i) discriminate between diverse microbial species and strains, (ii) detect in situ intracellular components or structures such as inclusion bodies, storage materials or endospores, (iii) detect and quantify metabolically released CO2 in response to various different substrates, and (i.v.) characterize growth-dependent phenomena and cell-drug interactions. The characteristic information is extd. from the **spectral** contours by applying resoln. enhancement techniques, difference **spectroscopy**, and pattern recognition methods such as factor-, cluster-, linear discriminant anal., and artificial neural networks. Particularly interesting applications arise by means of a light microscope coupled to the **spectrometer**. FT-IR **spectra** of micro-colonies contg. less than 103 cells can be obtained from colony replica by a stamping technique that transfers micro-colonies growing on culture plates to a special IR-sample holder. Using a computer controlled x,y-stage together with mapping and video techniques, the fundamental tasks of microbiol. anal., namely **detection**, enumeration, and differentiation of **micro-organisms** can be integrated in one single app. FT-IR and NIR-FT-**Raman spectroscopy** can also be used in tandem to characterize medically important microorganisms. Currently novel methodologies are tested to take advantage of the complementary information of IR and **Raman spectra**. Representative examples on medically important microorganisms will be given that highlight the new possibilities of vibrational **spectroscopies**.

L9 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:135839 CAPLUS
DOCUMENT NUMBER: 128:138331
TITLE: **Raman spectroscopic** method for identification of biological contaminant in sample using deuteration
INVENTOR(S): Harhay, Gregory P.
PATENT ASSIGNEE(S): Harhay, Gregory P., USA
SOURCE: Eur. Pat. Appl., 36 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 818674	A2	19980114	EP 1997-305121	19970711
EP 818674	A3	19980729		

Searcher : Shears 308-4994

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

AU 9728592 A1 19980122 AU 1997-28592 19970711
PRIORITY APPLN. INFO.: US 1996-678649 19960711

AB The invention provides a method of identifying an analyte in a sample, said method comprising: (i) treating said sample with a deuterating agent; (ii) directing monochromatic light at said sample; (iii) detecting **Raman** light signal from said sample; (i.v.) and comparing said **Raman** light signal with a std. whereby to identify said analyte. Biol. contaminants in a sample may efficiently be identified using a **Raman spectroscopic** method in which the sample is pretreated with a deuterating agent.

L9 ANSWER 11 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:361634 CAPLUS
DOCUMENT NUMBER: 127:31242
TITLE: Non-invasive methods for determining live or death of freeze-preserved microorganisms in a sealed container
INVENTOR(S): Hamaguchi, Hiroo; Suzuki, Eiichiro; Ishihara, Masaru; Yamanaka, Shigeru
PATENT ASSIGNEE(S): Kanagawa Kagaku Gijutsu Academy, Japan; Ajinomoto Co., Inc.
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09121889	A2	19970513	JP 1995-283589	19951031

AB Disclosed is a non-invasive method for **detg.** whether the freeze-preserved **microorganisms** in a sealed container are still alive or dead by using **Raman spectroscopy**, without the need of opening the container. The method is based on the ratio of CO2/O gas in the container.

L9 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1995:1007323 CAPLUS
DOCUMENT NUMBER: 124:53980
TITLE: Dairy product analysis: identification of **microorganisms** by mid-infrared **spectroscopy** and **determination** of constituents by **Raman spectroscopy**
AUTHOR(S): Fehrmann, Angela; Franz, Monika; Hoffmann,

Andreas; Rudzik, Lutz; Wuest, Eberhard
CORPORATE SOURCE: Milchwirtschaftliche Lehr- Untersuchungsanstalt, Hannover, 30453, Germany
SOURCE: J. AOAC Int. (1995), 78(6), 1537-42
CODEN: JAINEE; ISSN: 1060-3271
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Identification of microorganisms by traditional microbiol. methods is time consuming. The German Federal Health Office has developed a method using mid-IR **spectroscopy** to identify microorganisms rapidly. This method has been modified for application to microorganisms (esp. Clostridium) important in the dairy industry. Mid- and near-IR **spectroscopies** are well-established methods for quant. measurements of fat, protein, lactose, and solid content in a variety of products. A disadvantage of both methods is the huge absorption due to water; extn. of other components is complicated and can be achieved only statistically. With **Raman spectroscopy**, water causes less absorption. The use of **Raman spectroscopy** as a quant. method for milk powder was evaluated.

L9 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:453485 CAPLUS
DOCUMENT NUMBER: 121:53485
TITLE: Antibiotic susceptibility test
INVENTOR(S): Nelson, Wilfred H.
PATENT ASSIGNEE(S): Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, USA
SOURCE: PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9411526	A1	19940526	WO 1993-US11036	19931118
W: AT, AU, BB, BG, BR, BY, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5573927	A	19961112	US 1992-977670	19921118
AU 9456066	A1	19940608	AU 1994-56066	19931118
PRIORITY APPLN. INFO.:			US 1992-977670	19921118
			WO 1993-US11036	19931118

AB The invention relates to a method for biodetection and identification of antibiotic susceptibility in bacteria by creating

Raman spectra against target cells and comparing them. Thus, an Escherichia coli culture in the lag phase was divided and 1 portion was treated with rifampin. The 2 cultures were subjected to pulsed laser-emitted UV light at 242 nm and the back-scattered **Raman spectra** were compared. The comparison showed that rifampin greatly lowered the peak in the **spectrum** caused by ribosomes, indicating that cell growth was inhibited.

L9 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:176498 CAPLUS
DOCUMENT NUMBER: 120:176498
TITLE: Vibronic mixing in the strong electronic coupling limit. **Spectroscopic** effects of forbidden transitions
AUTHOR(S): Lathrop, Elizabeth J. P.; Friesner, Richard A.
CORPORATE SOURCE: Department of Chemistry, Columbia University, New York, NY, 10027, USA
SOURCE: J. Phys. Chem. (1994), 98(11), 3050-5
CODEN: JPCHAX; ISSN: 0022-3654
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors consider an excited-state manifold in which an allowed transition is strongly coupled electronically to a forbidden (dark) state and use nonperturbative methods to det. the effects of this coupling on the optical properties. The authors find that the strong coupling limit is qual. different from the usual weak coupling case; in particular, the bright state **spectrum** is substantially altered, displaying renormalized Franck-Condon factors which are obsd. in absorption, hole burning, and resonance **Raman** expts. The authors map out the magnitude of this renormalization as a function of various parameters in the theory and note that there is a phase-transition-like behavior as one passes from the weak to the strong coupling regimes. Finally, the authors suggest that this mechanism provides a straightforward explanation for the hole-burning **spectra** obsd. for the primary donor in the **bacterial** photosynthetic reaction center and **det.** a region of parameter space compatible with the exptl. results.

L9 ANSWER 15 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:90290 CAPLUS
DOCUMENT NUMBER: 120:90290
TITLE: Ultraviolet micro-**Raman** **spectrograph** for the **detection** of small numbers of **bacterial** cells
AUTHOR(S): Chadha, S.; Nelson, W. H.; Sperry, J. F.
CORPORATE SOURCE: Dep. Chem., Univ. Rhode Island, Kingston, RI, 02881, USA

SOURCE: Rev. Sci. Instrum. (1993), 64(11), 3088-93
CODEN: RSINAK; ISSN: 0034-6748
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The construction of a practical UV micro-**Raman** **spectrograph** capable of selective excitation of bacterial cells and other microscopic samples was described. A refractive objective is used to focus continuous-wave laser light on a sample and at the same time collect the scattered light at 180.degree.. With the aid of a quartz lens the image produced is focused on the slits of a **spectrograph** equipped with a single 2400 grooves/mm grating optimized for 250 nm. **Spectra** were detected by a blue-intensified diode array detector. Resonance **Raman spectra** of Bacillus subtilis and Flavobacterium capsulatum excited by the 257.2 nm output of a continuous-wave laser were recorded at 900-1800 cm-1. Bacterial cells were immobilized on a SiO2 plate by polylysine and were counted visually. Cooling was required to retard sample degrdn. Sample sizes ranged 1-50 cells with excitation times 15-180 s. Excellent **spectra** were obtained from 20 cells in 15 s using a **spectrograph** having only 3% throughput.

L9 ANSWER 16 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1992:546501 CAPLUS
DOCUMENT NUMBER: 117:146501
TITLE: UV resonance **Raman** **spectroscopic detection** and identification of **bacteria** and other microorganisms
AUTHOR(S): Nelson, Wilfred H.; Sperry, Jay F.
CORPORATE SOURCE: Dep. Chem., Univ. Rhode Island, Kingston, RI, 02881-0801, USA
SOURCE: Mod. Tech. Rapid Microbiol. Anal. (1991), 97-143. Editor(s): Nelson, Wilfred H. VCH: New York, N. Y.
CODEN: 58AEAV
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The use of resonance **Raman** and esp. UV resonance **Raman spectroscopy** for the **detection** and identification of **microorganisms** are described. To explain the complex **spectra** of microorganisms in terms of the **spectra** of bacterial taxonomic marker compds. is emphasized. The reader is alerted to problems encountered in the use of UV resonance **Raman spectroscopy**. As well as to the potential for future studies is also mentioned.

L9 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1989:169613 CAPLUS

DOCUMENT NUMBER: 110:169613
TITLE: Rapid **detection** of **bacteria** and other **microorganisms**: a basic study in the application of resonance **Raman** and time-resolved fluorescence **spectroscopies**
AUTHOR(S): Nelson, W. H.
CORPORATE SOURCE: Dep. Chem., Univ. Rhode Island, Kingston, RI, USA
SOURCE: Report (1988), ARO-22367.11-LS; Order No. AD-A194719, 22 pp. Avail.: NTIS From: Gov. Rep. Announce. Index (U. S.) 1988, 88(20), Abstr. No. 851,719
DOCUMENT TYPE: Report
LANGUAGE: English
AB Resonance **Raman Spectra** were obtained for a variety of chromobacteria by using low-power 488-nm excitation. **Spectra** are simple, of high quality, and useful for identification purposes at the species level. **Raman** microprobe studies show conclusively that **spectra** can be obtained from single cells in pure cultures or in mixed cultures without the need for sepn. Extensions of the study were made to representative colorless gram-neg. and gram-pos. bacteria. Spora other than bacteria have been studied as well. Pollen, mold spores, bacterial spores, algae, and viruses all give **spectra** but only viruses and bacterial spores appear to give intense UV resonance **Raman spectra**. The primary fluorescence of **bacteria** was studied in detail to **det**. its potential in rapid detection. Fluorescence was detd. for S. epidermidis, P. fluorescens, E. cloacae, E. coli, and B. subtilis. Fluorescence contributions were assigned in part to tryptophan, pteridines, related flavins, and pyridine coenzymes.

L9 ANSWER 18 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1987:455901 CAPLUS
DOCUMENT NUMBER: 107:55901
TITLE: SERRS as a probe for pigments located near the surfaces of bacterial photosynthetic membranes
AUTHOR(S): Picorel, Rafael; Holt, Randall E.; Cotton, Therese M.; Seibert, Michael
CORPORATE SOURCE: Sol. Energy Res. Inst., Golden, CO, 80401, USA
SOURCE: Prog. Photosynth. Res., Proc. Int. Congr. Photosynth., 7th (1987), Meeting Date 1986, Volume 1, 423-6. Editor(s): Biggins, John. Nijhoff: Dordrecht, Neth.
CODEN: 55RQAT
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The application of SERS to probe non-destructively for the presence

of the carotenoid spirilloxanthin near the surface of photosynthetic membranes of Rhodospirillum rubrum was demonstrated. The exposed membrane surface of chromatophores (cytoplasmic side out) and spheroplast-derived vesicles (periplasmic side out) were examd. and it was shown that the carotenoid was located on the cytoplasmic side of the photosynthetic membrane.

L9 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1986:105425 CAPLUS
DOCUMENT NUMBER: 104:105425
TITLE: A resonance **Raman** microprobe study of chromobacteria in water
AUTHOR(S): Dalterio, R. A.; Nelson, W. H.; Britt, D.; Sperry, J.; Purcell, F. J.
CORPORATE SOURCE: Dep. Chem., Univ. Rhode Island, Kingston, RI, 02881, USA
SOURCE: Appl. Spectrosc. (1986), 40(2), 271-2
CODEN: APSPA4; ISSN: 0003-7028
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Resonance **Raman spectra** of Flavobacterium aquatile, F. arborescens, Rhodopseudomonas palustris, and Rhodospirillum rubrum in aq. suspension were obtained at high resoln. With highly pigmented R. rubrum, 1-3 organisms were sufficient for a good **spectrum**; the less highly pigmented chromobacteria required 10-12 (flavobacteria) or 25 (R. palustris) organisms. The high sensitivity suggests the usefulness of **Raman spectroscopy** for **detection** of individual **bacterium** in complex mixts.

L9 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1985:58716 CAPLUS
DOCUMENT NUMBER: 102:58716
TITLE: Quantitative analysis of nucleic acids, proteins, and viruses by **Raman** band deconvolution
AUTHOR(S): Thomas, George J., Jr.; Agard, David A.
CORPORATE SOURCE: Dep. Chem., Southeast. Massachusetts Univ., North Dartmouth, MA, 02747, USA
SOURCE: Biophys. J. (1984), 46(6), 763-8
CODEN: BIOJAU; ISSN: 0006-3495
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A constrained, iterative Fourier deconvolution method is employed to enhance the resoln. of **Raman spectra** of biol. mols. for quant. assessment of macromol. secondary structures and H isotope exchange kinetics. In an application to the Pf1 filamentous bacterial virus, it is shown the **Raman** amide I band contains no component other than that due to .alpha.-helix,

indicating the virtual 100% helicity of coat proteins in the native virion. Comparative anal. of the amide I band of 6 filamentous phages (fd, If1, IKe, Pf1, Xf, and Pf3), all at the same exptl. conditions, indicates that the subunit helix-percentage ranges from a high of 100% in Pf1 to a low of 71% in Xf. Deconvolution of amide I of Pf3 at elevated temps., for which an .alpha.-to-.beta. transition was previously reported, allows quant. evaluation of the contributions of both .alpha.-helix and .beta.-strand conformations to the structure of the thermally perturbed viral coat protein. Weak **Raman** lines of viral DNA bases and coat protein side chains, which are poorly resolved instrumentally, are also distinguished for all viruses by the deconvolution procedure. Application to the C-8 H isotope exchange reaction of a purine constituent of tRNA permits accurate detn. of the exchange rate const., which is in agreement with calcns. based upon curve-fitting methods.

L9 ANSWER 21 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1981:152758 CAPLUS
DOCUMENT NUMBER: 94:152758
TITLE: Resonance **Raman spectroscopy** in the study of carotene-containing biomolecules and microorganisms
AUTHOR(S): Nelson, Wilfred H.
CORPORATE SOURCE: Dep. Chem., Univ. Rhode Island, RI, USA
SOURCE: Am. Lab. (Fairfield, Conn.) (1981), 13(3), 94, 96-8, 100-1
CODEN: ALBYBL; ISSN: 0044-7749
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 38 refs.

L9 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1980:185583 CAPLUS
DOCUMENT NUMBER: 92:185583
TITLE: A resonance **Raman** method for the rapid **detection** and identification of **bacteria** in water
AUTHOR(S): Howard, W. F., Jr.; Nelson, W. H.; Sperry, J. F.
CORPORATE SOURCE: Dep. Chem., Univ. Rhode Island, Kingston, RI, 02881, USA
SOURCE: Appl. Spectrosc. (1980), 34(1), 72-5
CODEN: APSPA4; ISSN: 0003-7028
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Resonance **Raman spectra** are reported for 16 types of carotene-contg. bacteria and algae in aq. dispersion. **Spectra** are obtained with ease from organisms grown in culture and collected by centrifugation. In many instances

spectra produced with 488 nm incident radiation are sufficiently different to provide a basis for identification. While most information is contained in the 900-1600 cm-1 region, several bacteria exhibit pronounced carotenoid overtone and combination bands which can be assigned along with the fundamental vibrations.

L9 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1977:27441 CAPLUS
DOCUMENT NUMBER: 86:27441
TITLE: Preliminary evaluation of LIDAR techniques for advance warning of biological threats
AUTHOR(S): Hoye, Walter
CORPORATE SOURCE: Nav. Weapons Lab., Dahlgren, Va., USA
SOURCE: U. S. NTIS, AD Rep. (1974), AD-917105, 51 pp.
Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1976, 76(22), 246
CODEN: XADRCH
DOCUMENT TYPE: Report
LANGUAGE: English
AB Equations were developed to predict the capabilities of laser radar techniques for **detection** of airborne **microorganisms**. In order to discriminate threat microorganisms from normal atm. contents, optical interactions such as fluorescence and **Raman** scatter must be utilized. Selected optical properties of microorganisms, mostly bacteria, were explored. Preliminary exptl. results of the ultraviolet and visible optical d., the **spectral** fluorescence characteristics, and the fluorescence quantum efficiency of microorganisms are reported. The results are corrected for instrument biases and, in general, show characteristic nucleic acid and protein absorption in the ultraviolet while tryptophan and chlorophyll fluorescence are predominant. A preliminary value of 12% was obtained for the tryptophan quantum efficiency of Escherichia coli. The results are used in the LIDAR equations of predict that the fluorescence technique does have promise of **detecting bacteria** concns. of 3 .times. 108 organisms/m3 at remote ranges of 1 km at night and 500 m in the day. Predictions of **Raman** scatter capabilities are indicated but not performed pending a contractor's report of **Raman** cross sections of microorganisms.

L9 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1977:12450 CAPLUS
DOCUMENT NUMBER: 86:12450
TITLE: Action of carbon monoxide on bacteria as seen by laser-**Raman spectroscopy**
AUTHOR(S): Stoneham, M. E.; Webb, S. J.
CORPORATE SOURCE: Coll. Eng., Univ. Saskatchewan, Saskatoon, Sask., Can.

SOURCE: IRCS Med. Sci.: Libr. Compend. (1976), 4(11), 520
CODEN: IRLCDZ
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Laser-**Raman spectroscopy** of Escherichia coli cells exposed to CO gas showed changes not only in the metabolic activity of the cells but also in the metabolic time clock. The change in the pattern of the **Raman** shift lines was dependent on the time, after cell suspension, at which exposure to CO was commenced. Lazer-**Raman spectroscopy** may enable sequential in vivo metabolic activity of cells to be followed and permit the effects of a gas on them to be detd. rapidly.

(FILE 'MEDLINE, BIOSIS, EMBASE, LIFESCI, WPIDS, CONFSCI, SCISEARCH, JICST-EPLUS' ENTERED AT 16:06:00 ON 08 FEB 2000)
L10 23 S L9
L11 15 DUP REM L10 (8 DUPLICATES REMOVED)

L11 ANSWER 1 OF 15 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1999:113594 BIOSIS
DOCUMENT NUMBER: PREV199900113594
TITLE: **Raman** optrode processes and devices for **detection** of chemicals and **microorganisms**.
AUTHOR(S): Grow, A. E.
CORPORATE SOURCE: 5882 Highplace Dr., San Diego, Calif. 92120 USA
PATENT INFORMATION: US 5866430 Feb. 2, 1999
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (Feb. 2, 1999) Vol. 1219, No. 1, pp. 502-503.
ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English

L11 ANSWER 2 OF 15 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1999:326993 BIOSIS
DOCUMENT NUMBER: PREV199900326993
TITLE: Detection of microbial life on minerals by UV **Raman spectroscopy**.
AUTHOR(S): Storrie-Lombardi, M. C. (1); Tsapin, A. I. (1); Nealson, K. H. (1); McDonald, G. D. (1); Sun, H. (1)
CORPORATE SOURCE: (1) Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (1999) Vol. 99, pp. 378-379.
Meeting Info.: 99th General Meeting of the American Society for Microbiology Chicago, Illinois, USA May

30-June 3, 1999 American Society for Microbiology
. ISSN: 1060-2011.
DOCUMENT TYPE: Conference
LANGUAGE: English

L11 ANSWER 3 OF 15 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1998-531577 [45] WPIDS
DOC. NO. NON-CPI: N1998-414807
DOC. NO. CPI: C1998-159444
TITLE: **Detection** of **microorganisms** in sample - comprises placing sample in medium containing antibodies, contacting medium with light and measuring light emitted from medium.
DERWENT CLASS: B04 D16 J04 S03
INVENTOR(S): NELSON, W H; SPERRY, J F
PATENT ASSIGNEE(S): (RHOD-N) RHODE ISLAND HIGHER EDUCATION
COUNTRY COUNT: 21
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 9841842	A1	19980924	(199845)*	EN	13
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: AU CA JP					
AU 9864555	A	19981012	(199907)		
EP 966662	A1	19991229	(200005)	EN	
R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9841842	A1	WO 1998-US4623	19980310
AU 9864555	A	AU 1998-64555	19980310
EP 966662	A1	EP 1998-910272	19980310
		WO 1998-US4623	19980310

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9864555	A	Based on	WO 9841842
EP 966662	A1	Based on	WO 9841842

PRIORITY APPLN. INFO: US 1997-818534 19970314
AN 1998-531577 [45] WPIDS
AB WO 9841842 A UPAB: 19981111
Detection of **microorganisms** (A) comprises: (a) placing sample (S) in a medium containing antibodies (Ab) specific

for (A), forming an AB-A complex; (b) contacting the medium with a beam of light energy, where some of the energy emitted from the medium is lower resonance enhanced **Raman** back-scattered energy, and (c) detecting the presence or absence of (A) based on a characteristic **spectral** peak of (A). Also claimed is a system for carrying out the method described above.

The medium is a fluid and (A) is a bacterium. The light energy is ultraviolet light in the range 242-257 nm. The method further comprises removing the Ab complex from the liquid medium and detecting the absence or presence of (A).

USE - The process is used for the environmental analysis for various consumer products, such as foods and liquids, and is useful for clinical analysis to provide rapid analysis of body fluids, e.g. blood, spinal fluid and urine.

ADVANTAGE - The process can be carried out with greater specificity, sensitivity and greater speed than previous known methods. The method has very little background interference and does not require any prior separation and culturing steps.

Dwg.1/1

L11 ANSWER 4 OF 15 MEDLINE DUPLICATE 1
ACCESSION NUMBER: 1998412734 MEDLINE
DOCUMENT NUMBER: 98412734
TITLE: Surface enhanced **Raman** **spectroscopic** monitor of P. acnes lipid hydrolysis in vitro.
AUTHOR: Weldon M K; Morris M D; Harris A B; Stoll J K
CORPORATE SOURCE: Department of Chemistry, University of Michigan, Ann Arbor 48109-1055, USA.
SOURCE: JOURNAL OF LIPID RESEARCH, (1998 Sep) 39 (9) 1896-9. Journal code: IX3. ISSN: 0022-2275.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199902
ENTRY WEEK: 19990204

AB Surface enhanced **Raman** **spectroscopy** (SERS) at a silver microelectrode was used to monitor bacterial hydrolysis of triglycerides in lipid mixtures that model sebaceous gland secretions. Mixtures of wax esters, squalene, triolein, and triisostearin were used as model skin secretions. The transformation was followed in vitro as changes in the SERS caused by hydrolysis of triglyceride to fatty acid. The fatty acid was adsorbed as its carboxylate, which is readily identified by the characteristic band at ca. 1395 cm(-1). Co-adsorption of propionate was also observed. The technique can also confirm the presence of **bacteria** by **detection** of short chain carboxylic acids released as products of fermentation during the growth of these cells.

L11 ANSWER 5 OF 15 BIOSIS COPYRIGHT 2000 BIOSIS DUPLICATE 2
ACCESSION NUMBER: 1998:409080 BIOSIS
DOCUMENT NUMBER: PREV199800409080
TITLE: A comparative study of conserved protein interactions of the primary electron donor in photosynthetic purple bacterial reaction centers.
AUTHOR(S): Ivancich, Anabella; Mattioli, Tony A. (1)
CORPORATE SOURCE: (1) Sect. Biophys. Proteines Membranes, Dep. Biol. Cell. Mol., CEA CNRS URA 2096, CEA/Saclay, 91191 Gif-sur-Yvette cedex France
SOURCE: Photosynthesis Research, (March, 1998) Vol. 55, No. 2-3, pp. 207-215.
ISSN: 0166-8595.
DOCUMENT TYPE: Article
LANGUAGE: English
AB The pigment-protein interactions within the binding site of the bacteriochlorophyll (BChl) dimer constituting the primary electron donor (P) in several, native, photosynthetic **bacterial** reaction centers have been **determined** using Fourier transform **Raman spectroscopy**. For reaction centers whose primary sequence data are available, and assuming a structural analogy with the Rb. sphaeroides RC whose high-resolution three-dimensional structure is known, amino acid residues donating hydrogen bonds to P are proposed. Consequently, one may propose the microenvironment structure of the primary donors studied and correlate this deduced structure with the known absorption and redox properties of the primary donors. In this 'mini-review' of our past work, we group and classify the primary donors with respect to their specific H-bonding interactions with the protein. Ibis classification reveals trends in the H-bonding and certain physicochemical properties such as the Pdegree/P.+ redox midpoint potential, the positive charge distribution over the dimeric primary donors in their oxidized radical cation state P.+, and the absorption maxima of the lower exciton Qy absorption band of P.

L11 ANSWER 6 OF 15 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1997-314239 [29] WPIDS
DOC. NO. NON-CPI: N1997-260136
DOC. NO. CPI: C1997-101136
TITLE: Measurement of survival of sealed freeze-dried microorganism without breaking - by subjecting to **Raman spectrum** analysis.
DERWENT CLASS: D16 S03
PATENT ASSIGNEE(S): (AJIN) AJINOMOTO KK; (KANA-N) ZH KANAGAWA KAGAKU GIJUTSU ACAD
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
JP 09121889	A	19970513	(199729)*		5

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
JP 09121889	A	JP 1995-283589	19951031

PRIORITY APPLN. INFO: JP 1995-283589 19951031
AN 1997-314239 [29] WPIDS
AB JP 09121889 A UPAB: 19970716
Measurement of survival of sealed freeze-dried microorganism, comprises subjected sealed freeze-dried microorganism to **Raman spectrum** analysis, whereby ratio of oxygen to carbon dioxide in the sealed container is measured.
ADVANTAGE - Without killing **microorganism**, survival can be **detected**.
Dwg.0/2

L11 ANSWER 7 OF 15 MEDLINE DUPLICATE 3
ACCESSION NUMBER: 96112712 MEDLINE
DOCUMENT NUMBER: 96112712
TITLE: Dairy product analysis: identification of **microorganisms** by mid-infrared **spectroscopy** and **determination** of constituents by **Raman spectroscopy**
.
AUTHOR: Fehrmann A; Franz M; Hoffmann A; Rudzik L; Wust E
CORPORATE SOURCE: Milchwirtschaftliche Lehr- und Untersuchungsanstalt und Fachhochschule Hannover, Germany.
SOURCE: JOURNAL OF AOAC INTERNATIONAL, (1995 Nov-Dec) 78 (6) 1537-42.
Journal code: BKS. ISSN: 1060-3271.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199610
AB Identification of microorganisms by traditional microbiological methods is time consuming. The German Federal Health Office has developed a method using mid-infrared **spectroscopy** to identify microorganisms rapidly. This method has been modified for application to microorganisms important in the dairy industry. Mid- and near-infrared **spectroscopies** are well-established methods for quantitative measurements of fat, protein, lactose, and solid content in a variety of products. A disadvantage of both

methods is the huge absorption due to water; extraction of other components is complicated and can be achieved only statistically. With **Raman spectroscopy**, water causes less absorption. We investigated the use of **Raman spectroscopy** as a quantitative method for milk powder.

L11 ANSWER 8 OF 15 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1994-183524 [22] WPIDS
DOC. NO. NON-CPI: N1994-144848
DOC. NO. CPI: C1994-083226
TITLE: **Determining** effectiveness of antibiotics against **bacteria** - e.g. using ultraviolet resonance **Raman spectroscopy**.
DERWENT CLASS: B04 D16 S03
INVENTOR(S): NELSON, W H
PATENT ASSIGNEE(S): (RHOD-N) RHODE ISLAND HIGHER EDUCATION; (NELS-I) NELSON W H
COUNTRY COUNT: 2
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 9411526	A1	19940526	(199422)*	EN	19
AU 9456066	A	19940608	(199435)		
US 5573927	A	19961112	(199651)		4

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9411526	A1	WO 1993-US11036	19931118
AU 9456066	A	AU 1994-56066	19931118
US 5573927	A	US 1992-977670	19921118

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9456066	A	Based on	WO 9411526

PRIORITY APPLN. INFO: US 1992-977670 19921118
AN 1994-183524 [22] WPIDS
AB WO 9411526 A UPAB: 19940722
Determining the effectiveness of an antibiotic against a bacteria comprises: (a) creating **spectra** of at least a first set of cells of an initially cultured target bacteria; (b) culturing the target cells of a second set in a growth medium which is free of antibiotic; (c) displaying the **spectra** of the cells of the second set prior to mitosis; (d) culturing the target cells of a

third set in a growth medium contg. an antibiotic of interest; (e) displaying the **spectra** of the cells of a third set prior to mitosis; and (f) comparing the **spectra** of the second and third sets of **bacteria** to **determine** the effectiveness of the antibiotic.

ADVANTAGE - The process is quicker than prior art processes.

Dwg.1/4

ABEQ US 5573927 A UPAB: 19961219

A method for determining the effectiveness of an antibiotic against a bacteria which comprises:

displaying **Raman spectra** of a first set of target cells of an initially cultured bacteria E. coli;

culturing said target cells of a second set in a growth medium free of antibiotic;

displaying the **Raman spectra** of the cells of the second set prior to mitosis;

culturing said target cells of a third set in a growth medium containing an antibiotic of interest;

displaying the **Raman spectra** of the target cells of the third set prior to mitosis; and

displaying ribosome peaks and comparing the ribosome peaks of the **spectra** of the second and third sets.

Dwg.0/4

L11 ANSWER 9 OF 15 SCISEARCH COPYRIGHT 2000 ISI (R)

ACCESSION NUMBER: 94:193460 SCISEARCH

THE GENUINE ARTICLE: NB997

TITLE: VIBRONIC MIXING IN THE STRONG ELECTRONIC COUPLING LIMIT - **SPECTROSCOPIC** EFFECTS OF FORBIDDEN TRANSITIONS

AUTHOR: LATHROP E J P; FRIESNER R A (Reprint)

CORPORATE SOURCE: COLUMBIA UNIV, DEPT CHEM, NEW YORK, NY, 10027 (Reprint); COLUMBIA UNIV, DEPT CHEM, NEW YORK, NY, 10027

COUNTRY OF AUTHOR: USA

SOURCE: JOURNAL OF PHYSICAL CHEMISTRY, (17 MAR 1994) Vol. 98, No. 11, pp. 3050-3055.
ISSN: 0022-3654.

DOCUMENT TYPE: Article; Journal

FILE SEGMENT: PHYS

LANGUAGE: ENGLISH

REFERENCE COUNT: 12

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We consider an excited-state manifold in which an allowed transition is strongly coupled electronically to a forbidden (dark) state and use nonperturbative methods to determine the effects of this coupling on the optical properties. We find that the strong coupling limit is qualitatively different from the usual weak coupling case; in particular, the bright state **spectrum** is

substantially altered, displaying renormalized Franck-Condon factors which can be observed in absorption, hole burning, and resonance **Raman** experiments. We map out the magnitude of this renormalization as a function of various parameters in the theory and note that there is a phase-transition-like behavior as one passes from the weak to the strong coupling regimes. Finally, we suggest that this mechanism provides a straightforward explanation for the hole-burning **spectra** observed for the primary donor in the **bacterial** photosynthetic reaction center and **determine** a region of parameter space compatible with the experimental results.

L11 ANSWER 10 OF 15 EMBASE COPYRIGHT 2000 ELSEVIER SCI. B.V.DUPLICATE 4

ACCESSION NUMBER: 93223137 EMBASE
DOCUMENT NUMBER: 1993223137
TITLE: FT-IR studies on the triplet state of P680 in the photosystem II reaction center: Triplet equilibrium within a chlorophyll dimer.
AUTHOR: Noguchi T.; Inoue Y.; Satoh K.
CORPORATE SOURCE: Solar Energy Research Group, Physical/Chemical Research Institute,Wako, Saitama 351-01, Japan
SOURCE: Biochemistry, (1993) 32/28 (7186-7195).
ISSN: 0006-2960 CODEN: BICHAW
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The structure and molecular interactions of the primary donor (P680) in the reaction center (D1-D2-cytochrome b-559 complex) of photosystem II (PS II) have been investigated by detecting light-induced FT-IR difference **spectra** upon the formation of its triplet state (3P680). The 3P680/P680 **spectrum** obtained was analyzed by comparing it with difference **spectra** between the ground and lowest triplet states of purified chlorophyll a (Chl) in organic solvents. The negative peaks at 1669 and 1707 cm-1 accompanied by the positive peaks at 1627 and 1659 cm-1 in the 3P680/P680 **spectrum** were assigned to the keto C=O stretching mode, and the appearance of these two pairs of bands indicated that P680 has a dimeric structure analogous to that of the bacterial primary donor. From the band positions of the keto and carbomethoxy C=O stretches, the hydrogen- bonding properties of these two Chl molecules were found to be asymmetrical; in one Chl molecule both the keto and carbomethoxy C=O groups form hydrogen bonds, while in the other Chl molecule the keto C=O is not hydrogen-bonded whereas the carbomethoxy C=O probably is hydrogen-bonded. The temperature dependence of the intensity ratios

of the keto C=O bands revealed that the triplet state is equilibrated between the two Chl molecules with an energy gap of 8.4 .+-. 0.7 meV. Most of the triplet population was found to be localized on one Chl molecule (86% at 80 K), in which both of the two C=O groups are hydrogen-bonded, that is probably attached to the D1 subunit. Considering the structure of the **bacterial** reaction center **determined** by X- ray crystallography and the sequence homology between the D1 and D2 subunits of PS II and the L and M subunits of bacteria, a model of the P680 structure and its interactions with apoproteins has been proposed.

L11 ANSWER 11 OF 15 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 93:696132 SCISEARCH
THE GENUINE ARTICLE: MG624
TITLE: ULTRAVIOLET MICRO-**RAMAN** **SPECTROGRAPH** FOR THE **DETECTION** OF SMALL NUMBERS OF **BACTERIAL**-CELLS
AUTHOR: CHADHA S; NELSON W H (Reprint); SPERRY J F
CORPORATE SOURCE: UNIV RHODE ISL, DEPT CHEM, KINGSTON, RI, 02881; UNIV RHODE ISL, DEPT MICROBIOL, KINGSTON, RI, 02881
COUNTRY OF AUTHOR: USA
SOURCE: REVIEW OF SCIENTIFIC INSTRUMENTS, (NOV 1993) Vol. 64, No. 11, pp. 3088-3093.
ISSN: 0034-6748.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS; ENGI
LANGUAGE: ENGLISH
REFERENCE COUNT: 61
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The construction of a practical UV micro-**Raman** **spectrograph** capable of selective excitation of bacterial cells and other microscopic samples has been described. A reflective objective is used to focus cw laser light on a sample and at the same time collect the scattered light at 180-degrees. With the aid of a quartz lens the image produced is focused on the slits of a **spectrograph** equipped with a single 2400 grooves/mm grating optimized for 250 nm. **Spectra** were detected by means of a blue-intensified diode array detector. Resonance **Raman** **spectra** of Bacillus subtilis and Flavobacterium capsulatum excited by the 257.2 nm output of a cw laser were recorded in the 900-1800 cm-1 region. Bacterial cells were immobilized on a quartz plate by means of polylysine and were counted visually. Cooling was required to retard sample degradation. Sample sizes ranged from 1 to 50 cells with excitation times varying from 15 to 180 s. Excellent **spectra** have been obtained from 20 cells in 15 s using a **spectrograph** having only 3% throughput.

L11 ANSWER 12 OF 15 BIOSIS COPYRIGHT 2000 BIOSIS DUPLICATE 5
ACCESSION NUMBER: 1989:413157 BIOSIS

DOCUMENT NUMBER: BR37:68620
TITLE: **DETECTION** AND IDENTIFICATION OF **BACTERIA** BY MEANS OF UV EXCITED RESONANCE **RAMAN SPECTRA**.
AUTHOR(S): NELSON W H; DALTERIO R A; SPERRY J F
CORPORATE SOURCE: KINGSTON, R.I., USA.
ASSIGNEE: THE BOARD OF GOVERNORS FOR HIGHER EDUCATION, STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PATENT INFORMATION: US 4847198 11 Jul 1989
SOURCE: Off. Gaz. U. S. Pat. Trademark Off., Pat., (1989) 1104 (2), 1228.
CODEN: OGUPE7. ISSN: 0098-1133.
DOCUMENT TYPE: Patent
FILE SEGMENT: BR; OLD
LANGUAGE: English

L11 ANSWER 13 OF 15 LIFESCI COPYRIGHT 2000 CSA
ACCESSION NUMBER: 89:17215 LIFESCI
TITLE: **Detection** and identification of **bacteria** by means of ultra-violet excited resonance **Raman spectroscopy**.
AUTHOR: Nelson, W.H.; Dalterio, R.A.; Sperry, J.F.
CORPORATE SOURCE: Board of Governors, State of Rhode Island, Providence, RI (USA)
PATENT INFO.: US 4847198 1989
SOURCE: (1989) . US Cl. 435-34; Int. Cl. C12Q 1/04, C12N 13/00, G01J 3/44..
DOCUMENT TYPE: Patent
FILE SEGMENT: A
LANGUAGE: English
AB The authors describe a method for the identification of a bacterium which comprises: exciting taxonomic markers in a bacterium with a beam of ultraviolet energy, some of said energy emitted from the bacterium as a lower resonance enhanced **Raman** back-scattered energy; collecting the resonance enhanced **Raman** back-scattered energy substantially in the absence of fluorescence; converting the resonance enhanced **Raman** back-scattered energy into **spectra** which corresponds to the taxonomic markers in said bacterium; and displaying the **spectra** whereby the bacterium may be identified.

L11 ANSWER 14 OF 15 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1980:186242 BIOSIS
DOCUMENT NUMBER: BA69:61238
TITLE: A RESONANCE **RAMAN** METHOD FOR THE RAPID **DETECTION** AND IDENTIFICATION OF **BACTERIA** IN WATER.
AUTHOR(S): HOWARD W F JR; NELSON W H; SPERRY J F

US 0881853410P1

Creation date: 01-30-2004
Indexing Officer: LCHAU - LINH CHAU
Team: OIPEScanning
Dossier: 08818534

Legal Date: 04-16-1998

No.	Doccode	Number of pages
1	SRNT	20

Total number of pages: 20

Remarks:

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